

having a lot of corn is told what proportion of alfalfa, or roots, ought to be fed along with corn to attain the best economic results. This part of Mr. Coburn's book is valuable.

In the earlier chapters Mr. Coburn deals with the various races and breeds of swine in the States, and also with the principles of breeding; but, as may be inferred from the following quotation, although he writes at some length, he does not get much beyond the current nebulous ideas held by stock-breeders on these subjects:—

"There exists in some sections of Old Mexico a type of 'hog' which is the product of crossing a ram and a sow, and the term 'Cuino' has been applied to this rather violent combination. The ram used as a sire to produce the Cuino is kept with the hogs from the time he is weaned. . . . The Cuino reproduces itself and is often crossed a second and third time with a ram."

A number of the illustrations are not accurate representations of the breeds they refer to, but are rather artist's ideals.

OUR BOOK SHELF.

A Text-book of General Pathology for the Use of Students and Practitioners. By Prof. J. M. Beattie and W. E. Carnegie Dickson. Pp. xvi+475. (London: Rebman, Limited, 1908.) Price 17s. 6d. net.

In the preface the authors state that this volume is based on the teaching of the Edinburgh school of pathology, where the first chair of pathology in the United Kingdom was founded, and as such we welcome its appearance. At the same time, we do not note any features particularly novel, either in the subject-matter or in its arrangement, and in some respects the book seems to be lacking as a text-book of general pathology. Thus the important factor of heredity in disease, and shock and collapse, are not even mentioned, and we do not understand why a discussion of the nature of gout and the chemistry of uric-acid metabolism "do not come within the scope of the present volume."

The opening chapter deals all too briefly with the cell in health and disease. An excellent summary of modern views on cell-structure and cell-division is presented to the reader, but the section on the chemistry of the cell is mainly occupied with the recommendations of the Chemical and Physiological Societies on protein nomenclature.

The chapters which follow deal respectively with general retrogressive processes, disturbances of the circulation, inflammation and repair, progressive tissue changes, animal parasites, and immunity.

An excellent account is given of fatty change, and modern views respecting it are succinctly stated. Lardaceous disease is similarly well treated, but we do not understand why authors will persist in employing the terms "waxy" and "amyloid" to designate it, for "lardaceous" has the claim of priority; it is official in the "Nomenclature of Diseases" of the Royal College of Physicians, and the material present is universally known as lardacein.

The chapter on inflammation and repair gives all essential details on this important subject. The classification of tumours, admittedly a difficult subject, adopted by the authors is that advocated by Adami. This seems to us unnecessarily complex for the medical student and practitioner. The structure of tumours is given at some length, and the chief views on the

causation of tumours are summarised. As regards the latter, one or two points brought out by recent research have been omitted. For example, the occurrence of heterotype mitosis in malignant growths is referred to, but Bashford and Murray's criticism of Farmer, Moore, and Walker's work in this connection does not appear, and in discussing the supposed sarcomatous metamorphosis of carcinoma no mention is made of the fact, which now seems certain, that it is the connective tissue stroma of the carcinoma which is thus transformed, and ultimately overgrows the carcinomatous elements. The vegetable parasites are omitted, as these are dealt with in text-books of bacteriology, but an excellent and fairly full account is given of the animal parasites, protozoan and metazoan. Immunity is discussed in twenty-five pages, and the essentials of the subject are conveyed to the reader.

On the whole, the book may be regarded as a very useful text-book of general pathology. It is excellently got up, and a word of praise must be bestowed on the illustrations, 162 in number (also four coloured plates), the majority of which are the work of Mr. Richard Muir, and as a rule depict very clearly the subjects they represent, though it may be questioned whether so many are really necessary, as they tend to distract the student from an examination of the actual specimens themselves.

(1) *Der Bau des Weltalls.* By Prof. Dr. J. Scheiner. Dritte, verbesserte Auflage. Pp. 132. (Leipzig: B. G. Teubner, 1909.)

(2) *Die Planeten.* By Dr. Bruno Peter. Pp. 131. (Same publishers, 1909.) Price 1.25 marks each.

(1) The series "Aus Natur und Geisteswelt" is well known. It consists of a number of little treatises, in which men of science occupying prominent positions have attempted to explain in an accurate and comprehensive manner the results of past inquiries, and the position to which our knowledge has extended in various directions. In the former of the two specimens before us, Dr. Scheiner gives the substance of six popular lectures delivered in Berlin to a number of high-school teachers in the course of which he attempted to describe so much of the universe as comes within the range of our telescopes. He endeavoured to bring home to his audience the magnificent scheme of distances on which the planetary and stellar systems are planned; he traced the detection of proper motion of the fixed stars, and showed how the sun's movement in direction and amount can be determined. The phenomena of the sun are explained in some detail, preparatory to the examination of the spectra of stars, a subject which is discussed somewhat fully, as might be expected from a member of the staff of the Potsdam Observatory. Herein, as the author points out, he is on the sure ground of observation. But in his last chapter he approaches the more speculative subject of the origin and constitution of the universe. The subject is handled with skill, and, notwithstanding the limited space to which the author is restricted, he has succeeded in making his subject both clear and interesting. We do not wonder that the little work has passed through three editions, for apart from that longing to satisfy an intelligent curiosity which appeals to so many, the material is put in a very attractive form, which should appeal to many readers.

(2) Dr. Peter has a simpler subject, in which the facts have been many times detailed, and he has little scope for either originality of treatment or lucidity of arrangement. As the planets extend in order from the sun, so he must follow them from Mercury to Neptune. A Vulcan is hinted at within Mercury's orbit, but the

hypothetical planet outside Neptune does not attract comment. Since the satellites of Jupiter and Saturn come under notice, more attention might have been given to the moon and to the phenomena of eclipses. The plan of the book, however, aims rather at the description of the surface than of the motion of the planets, though naturally the tale of the discovery of Neptune is told once again. It might seem that there is scarcely room for such a book, considering the number of popular works that are extant, but there is some difficulty in keeping even these works abreast of the time. As an example we may quote the sentence, "Bestimmt sieben, wahrscheinlich sogar acht Monde umkreisen Jupiter." Notwithstanding the recent issue, there is here opportunity for correction in the next edition.

Untersuchung und Nachweis organischer Farbstoffe auf spektroskopischem Wege. By J. Formánek, with the collaboration of E. Grandmougin. Pp. 252. Second edition. Part i. (Berlin: Julius Springer, 1908.) Price 12 marks.

THE first edition of this work appeared in 1901 in a single volume. In part i. of the new edition which is now before us, subject-matter to which only forty-two pages were devoted in the first edition has been elaborated and added to so largely that it occupies the whole of part i. The introduction deals with spectroscopic methods in general, but more particularly with absorption spectra of coloured solutions and the influence of solvents, concentration, reagents, temperature, &c., on the latter. Then follow chapters on the spectroscope, general observations on the relationship between colour, absorption, fluorescence, and constitution of coloured compounds and dyestuffs, and on the relationship between chemical constitution and absorption spectra of dyestuffs belonging to individual classes. The latter include di- and tri-phenylmethane dyestuffs, quinonimide dyestuffs, fluorindene and tri-pheniodoxazine, acridine dyestuffs, and anthraquinone dyestuffs. No mention is made in this part of the azo-dyes, or the dyes of the indigo group, while of natural dyestuffs only alizarin is mentioned. It is to be presumed, however, that these important classes will receive due consideration in part ii., which represents the practical part of the work.

Although a vast amount of work has been done by different observers on the absorption spectra of the organic dyestuffs, the information is so scattered as to be difficult of access to the ordinary individual, and this is probably the main reason why this important

subject has hitherto not received the attention which it merits. There is, however, ample testimony that this particular application of the spectroscope is being more and more appreciated by the manufacturers of dyestuffs on the one hand, and the users on the other. This is borne out by the fact that such an eminently practical body as the Société industrielle de Mulhouse has made a pecuniary grant to the author to enable him to publish the new edition. Prof. Formánek has made a life-long study of his subject, and a comprehensive and up-to-date book on this particular application of spectrum analysis, such as the present edition promises to be, would be much appreciated. It is to be hoped that the completion of the work will not be long delayed.

On the Calculation of Thermochemical Constants. By H. Stanley Redgrove. Pp. viii+102. (London: Edward Arnold, 1909.) Price 6s. net.

THERE are a number of physical properties of substances, e.g. molecular heat of combustion, refractivity, &c., which are chiefly additive in character, so that their values can be calculated if we know the necessary fundamental constants. It is, however, also

well known that these properties, while still remaining additive, involve factors depending on the constitution of the molecule, e.g. method of linking, ring-formation, &c., all of which should be taken into account in the calculation of the value of the particular property in the case of any given substance. It is the thorough-going application of this principle in the calculation of thermochemical constants, extended so as to include, not only the specific thermochemical values of double and triple bonds, but also the thermal value of the "strain" in ring-compounds and of the single bond in chain-compounds, that the book under review expounds. The author's method of calculation has already appeared in several articles published in the *Chemical News*, on which the present monograph is based.

The author's method will best be understood from the following:—Let H be the value of a hydrogen atom *plus the link joining it to a carbon atom*. Let C be the value of a carbon atom, *not including the value of its valencies*; let L_1 , L_2 , L_3 , be the values of the single, double, and triple bonds respectively. Knowing the constants for four hydrocarbons, it is possible to calculate the value of the following:— $C+4H=a$, $2H-L_1=\beta$, $4H-L_2=\gamma$, $6H-L_3=\delta$. These are the "fundamental constants" for carbon and hydrogen. Moreover, the formula of any compound can be written in terms of these fundamental constants, and the theoretical value so obtained can then be compared with the experimental number.

This method the author has illustrated by the calculation of a large number of heats of combustion of substances belonging to different groups of compounds, and, with comparatively few exceptions, excellent concordance with the experimental numbers has been obtained. In this fact the method has its justification.

In an interesting section the author discusses also the relation between heats of combustion of ring-compounds and von Baeyer's strain theory, and he shows that in general there is perfect agreement. No simple relationship, however, has been obtained between the angle of deviation and the thermal equivalent.

The book is one which deserves and will no doubt obtain the attention of all who are interested in the relations between the thermochemistry of compounds and their chemical constitution; and the method of calculation is, moreover, one which will not improbably find application in the case of other physical properties of an additive character. It is an important addition to the literature of thermochemistry. A. F.

An Angler's Season. By W. Earl Hodgson. Pp. xii+299. (London: A. and C. Black, 1909.) Price 3s. 6d. net.

A book from Mr. Hodgson is always worthy of the angler's attention, and "An Angler's Season" is no exception to the rule. Dealing as he does solely with salmon and trout, and almost entirely with Scotch waters, the author's season begins in January and ends in October, and to each month a chapter is allotted; throughout there is much good reading, a deal of sage advice, and some controversy. Early in February Mr. Hodgson is already at issue with the dry-fly fisherman, and his attack on the "Hampshire method" waxes furious, but he says nothing of those who fish with the dry fly in Aberdeenshire waters and find the method successful. Fault is also found with some anglers for their "habitual indifference to the weight of a basket" and their love of nature; surely an angler is no worse for also being a naturalist, or at least taking an interest in the natural history of fishes. A study of what naturalists have written would have shown the danger of Mr. Hodgson's theory that taking large fish only, and restoring all of